UCMR 3 Current Status

- Contract Support
- Tiering
- Workgroup
- Two Pagers
- MRLs
- Methods

Possible UCMR 3 Analyte Information Sheet
Dicrotophos

CASRN: 141-66-2

Background & Use

- Dicrotophos is an organophosphate pesticide used as an insecticide.
- Office of Pesticide Programs (OPP) released an Interim Reregistration Eligibility Decision (IRED) for dicrotophos in April of 2002, and a Reregistration Eligibility Decision (RED) in July of 2006.
- Names & Synonyms: Dicrotophos; Phosphoric acid, 3-(dimethylamino)-1-methyl-3-oxo-1-propenyldimethyl ester, (E)-; Carbicron; Bidrin.

Health Effects

- *OPP Reference Dose (RfD):* 0.00007 mg/kg-day, based on a Lowest Observed Adverse Effect Level (LOAEL) of 0.02 mg/kg-day and an Uncertainty Factor (UF) of 300, and associated with decreased plasma, RBC, and brain cholinesterase activity.
- *Integrated Risk Information System (IRIS) RfD:* 0.0001 mg/kg-day, associated with decreased body weight.
- *Registry of Toxic Effects of Chemical Substances (RTECS) Lowest Oral Lethal Dose (LD50):* 11 mg/kg.
- *Health Reference Level (HRL):* 0.49 µg/L for non-cancer effects in drinking water based on the OPP RfD of 0.00007 mg/kg-day.

Production & Release

- *OPP RED Estimated Usage:* approximately 500,000 pounds active ingredient (a.i.) used annually in the U.S. (based on data from 1994-2001).
- *National Center for Food and Agricultural Policy (NCFAP) Pesticide Use Database:* approximately 360,000 pounds a.i. used across 13 states in 1997.
- *United States Geological Survey (USGS) Pesticide Use Maps:* approximately 972,000 pounds a.i. used in the U.S. in 2002.

Occurrence in Water

- *Six-Year Data (1998 – 2005):* contaminant occurrence data submitted by states to EPA in support of national contaminant occurrence assessments conducted for the second Six-Year Review:
  - California: no detects in 37 drinking water samples collected from 2 systems.
- *United States Department of Agriculture (USDA) Pesticide Data Program (PDP) (2001 – 2006):* not detected in any samples.
- *USGS Pilot Monitoring Program (PMP) (1999):* not detected in any of the raw or finished water sites sampled.

- *OPP RED Estimated Concentrations:* estimated maximum concentration in ground water ≤0.0048 µg/L.

Persistence & Mobility

- *Water Solubility:* 1,000,000 mg/L, indicates dicrotophos is very mobile in water.
- *Octanol-Water Partitioning Coefficient ($logK_{ow}$):* -0.49, indicates dicrotophos is very mobile in water
- *Henry's Law Constant (K_H):* 5.03E-11 atm-m^3/mol, indicates dicrotophos is very mobile in water.
- *Organic Carbon Partitioning Coefficient (K_{oc}):* 366.2 L/kg, indicates dicrotophos is moderately mobile in water.
- *Persistence, Bioaccumulation, and Toxicity Profiler (PBT Profiler):* predicts that 39% of dicrotophos will partition to water when modeled in a four-compartment system (water, air, soil, and sediment); indicates that dicrotophos is moderately mobile in water.
- *Modeled or Measured Degradation Rates:* suggest that dicrotophos is moderately persistent in the environment.

UCMR3 HRL Comparison

	B	D	I	K
1	**Contaminant**	**Method**	**Non-cancer HRL (ug/L)**	**Cancer HRL (ug/L)**
7	1,2,3-Trichloropropane	524.3	42	0.05
14	1,3-Butadiene	524.3		0.103
20	Ethylene thiourea	In development	1.4	2
24	1,4-Dioxane	522	700	2
26	Nitrofen	527	1.19	4.27
29	Vinclozolin	527	84	5.49
35	1,1,1,2-Tetrachloroethane	524.3	210	10
37	Chloromethane (Methyl chloride)	524.3	28	26.9
40	Acephate	In development	8.4	40
43	1,1-Dichloroethane	524.3	1400	61.4
47	Methyl tert-butyl ether	524.3	2100	194
55	3-Hydroxycarbofuran	531.2	0.42	
56	Dicrotophos	In development	0.49	
57	Perfluorooctane sulfonate (PFOS)	537	0.7	
61	Oxydemeton-methyl	In development	0.91	
65	Perfluorooctanoic acid (PFOA)	537	1.1	
67	Carbamazepine	In development	1.58	
72	Methamidophos	In development	2.1	
73	17α-Ethynylestradiol	In development	3.5	
82	n-Propylbenzene	524.3	5.83	
86	Methyl bromide (Bromomethane)	524.3	9.8	
88	sec-Butylbenzene	524.3	10.3	
100	Vanadium	200.8	21	
102	Acetaldehyde	556.1	23.3	
103	Chlorodifluoromethane (Freon 22)	524.3	31.5	
106	Molybdenum	200.8	35	
111	Cobalt	200.8	70	
115	Halon 1011 (bromochloromethane)	524.3	70	
123	Chlorate	300.1	210	
132	Bisphenol A	In development	350	
133	Formaldehyde	556.1	1400	
136	17β-Estradiol	In development	3500	
139	Strontium	200.7	4200	
140	4-Androstene-3,17-dione	In development		
141	5α-Dihydrotestosterone	In development		
142	Estriol (16α-Hydroxy-17β-estradiol)	In development		
143	Estrone	In development		
144	Fenamiphos sulfone	In development		
145	Fenamiphos sulfoxide	In development		
146	N-ethyl perfluorooctanesulfonamido-acetic acid (NEtFOSAA)	537		
147	N-methyl perfluorooctanesulfonamido-acetic acid (NMeFOSAA)	537		
148	Perfluorobutanesulfonic acid (PFBS)	537		
149	Perfluorodecanoic acid (PFDA)	537		
150	Perfluorododecanoic acid (PFDoA)	537		
151	Perfluoroheptanoic acid (PFHpA)	537		
152	Perfluorohexanesulfonic acid (PFHxS)	537		
153	Perfluorohexanoic acid (PFHxA)	537		

UCMR 3 HRL Comparison

	B	D	I	K
1	**Contaminant**	**Method**	**Non-cancer HRL (ug/L)**	**Cancer HRL (ug/L)**
154	Perfluorononanoic acid (PFNA)	537		
155	Perfluorotetradecanoic acid (PFTA)	537		
156	Perfluorotridecanoic acid (PFTrDA)	537		
157	Perfluoroundecanoic acid (PFUnA)	537		
158	Progesterone	In development		
159	Testosterone	In development		
160	Enterovirus	In development		

Health + Method

Contaminant	Method	Non-cancer HRL (ug/L)	Cancer HRL (ug/L)
1,2,3-Trichloropropane	524.3	42	0.05
1,3-Butadiene	524.3		0.103
1,1,1,2-Tetrachloroethane	524.3	210	10
Chloromethane (Methyl chloride)	524.3	28	26.9
1,1-Dichloroethane	524.3	1400	61.4
Methyl tert-butyl ether	524.3	2100	194
n-Propylbenzene	524.3	5.83	
Methyl bromide (Bromomethane)	524.3	9.8	
sec-Butylbenzene	524.3	10.3	
Chlorodifluoromethane (Freon 22)	524.3	31.5	
Halon 1011 (bromochloromethane)	524.3	70	
Ethylene thiourea	In development	1.4	2
1,4-Dioxane	522	700	2
Nitrofen	527	1.19	4.27
Vinclozolin	527	84	5.49
Acephate	In development	8.4	40
Dicrotophos	In development	0.49	
Oxydemeton-methyl	In development	0.91	
Methamidophos	In development	2.1	
3-Hydroxycarbofuran	531.2	0.42	
Perfluorooctane sulfonate (PFOS)	537	0.7	
Perfluorooctanoic acid (PFOA)	537	1.1	
Carbamazepine	In development	1.58	
17α-Ethynylestradiol	In development	3.5	
Bisphenol A	In development	350	
17β-Estradiol	In development	3500	
Vanadium	200.8	21	
Molybdenum	200.8	35	
Cobalt	200.8	70	
Strontium	200.7	4200	
Acetaldehyde	556.1	23.3	
Formaldehyde	556.1	1400	
Chlorate	300.1	210	

Fenamiphos sulfone	In development		
Fenamiphos sulfoxide	In development		
N-ethyl perfluorooctanesulfonamido-acetic acid (NEtFOSAA)	537		
N-methyl perfluorooctanesulfonamido-acetic acid (NMeFOSAA)	537		
Perfluorobutanesulfonic acid (PFBS)	537		
Perfluorodecanoic acid (PFDA)	537		
Perfluorododecanoic acid (PFDoA)	537		
Perfluoroheptanoic acid (PFHpA)	537		
Perfluorohexanesulfonic acid (PFHxS)	537		
Perfluorohexanoic acid (PFHxA)	537		

Perfluorononanoic acid (PFNA)	537		
Perfluorotetradecanoic acid (PFTA)	537		
Perfluorotridecanoic acid (PFTrDA)	537		
Perfluoroundecanoic acid (PFUnA)	537		
Progesterone	In development		
Testosterone	In development		
4-Androstene-3,17-dione	In development		
5α-Dihydrotestosterone	In development		
Estriol (16α-Hydroxy-17β-estradiol)	In development		
Estrone	In development		
Enterovirus	In development		

Methods Completed

Contaminant	Method	Non-cancer HRL (ug/L)	Cancer HRL (ug/L)
1,2,3-Trichloropropane	524.3	42	0.05
1,3-Butadiene	524.3		0.103
1,1,1,2-Tetrachloroethane	524.3	210	10
Chloromethane (Methyl chloride)	524.3	28	26.9
1,1-Dichloroethane	524.3	1400	61.4
Methyl tert-butyl ether	524.3	2100	194
n-Propylbenzene	524.3	5.83	
Methyl bromide (Bromomethane)	524.3	9.8	
sec-Butylbenzene	524.3	10.3	
Chlorodifluoromethane (Freon 22)	524.3	31.5	
Halon 1011 (bromochloromethane)	524.3	70	
1,4-Dioxane	522	700	2
Nitrofen	527	1.19	4.27
Vinclozolin	527	84	5.49
3-Hydroxycarbofuran	531.2	0.42	
Perfluorooctane sulfonate (PFOS)	537	0.7	
Perfluorooctanoic acid (PFOA)	537	1.1	
Vanadium	200.8	21	
Molybdenum	200.8	35	
Cobalt	200.8	70	
Strontium	200.7	4200	
Acetaldehyde	556.1	23.3	
Formaldehyde	556.1	1400	
Chlorate	300.1	210	

N-ethyl perfluorooctanesulfonamido-acetic acid (NEtFOSAA)	537		
N-methyl perfluorooctanesulfonamido-acetic acid (NMeFOSAA)	537		
Perfluorobutanesulfonic acid (PFBS)	537		
Perfluorodecanoic acid (PFDA)	537		
Perfluorododecanoic acid (PFDoA)	537		
Perfluoroheptanoic acid (PFHpA)	537		
Perfluorohexanesulfonic acid (PFHxS)	537		
Perfluorohexanoic acid (PFHxA)	537		
Perfluorononanoic acid (PFNA)	537		
Perfluorotetradecanoic acid (PFTA)	537		
Perfluorotridecanoic acid (PFTrDA)	537		
Perfluoroundecanoic acid (PFUnA)	537		

Methods in Development

Contaminant	Method	Non-cancer HRL (ug/L)	Cancer HRL (ug/L)
Ethylene thiourea	In development	1.4	2
Acephate	In development	8.4	40
Dicrotophos	In development	0.49	
Oxydemeton-methyl	In development	0.91	
Methamidophos	In development	2.1	
Carbamazepine	In development	1.58	
17α-Ethynylestradiol	In development	3.5	
Bisphenol A	In development	350	
17β-Estradiol	In development	3500	
Fenamiphos sulfone	In development		
Fenamiphos sulfoxide	In development		
Progesterone	In development		
Testosterone	In development		
4-Androstene-3,17-dione	In development		
5α-Dihydrotestosterone	In development		
Estriol (16α-Hydroxy-17β-estradiol)	In development		
Estrone	In development		
Enterovirus	In development		